

UNIVERSITY OF MIAMI

ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

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SWAB REPORT # 1011

SWAB DATE: 16 August 2021

R/V Roger Revelle and Van 2408-01

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Gary Lain

COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for ^3H and ^{14}C are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in dpm/m^2 . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m^2 . An error larger than the activity indicates that the activity is not significantly different from zero.

Criteria for SWAB Results

Category	^3H (dpm/m^2)	^{14}C (dpm m^2)	Recommendations
A	<500	<50	No action
B*	500-10,000	50-10,000	Needs cleaning before any natural tracer work. Decks in radiation vans with activities above $1000 \text{ dpm}/\text{m}^2$ should be cleaned.
C**	10,000-100,000	10,000-50,000	Must be cleaned before any use.
D***	>100,000	>50,000	May be a health hazard. Notify local radiation safety official.

Note: ^{14}C and ^{35}S have peak energies of 156 and 167 KeV, respectively; thus ^{35}S will be registered as ^{14}C by our counting techniques. Categories A, B and C are not a health hazard.

Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

^3H : Wash and scrub with radioactive cleanup detergent such as COUNT-OFF (50 ml COUNT-OFF to 4 liters of water), using sponges to distribute solution and reabsorb it.

^{14}C : Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing $^{14}\text{CO}_2$). Follow up with wash as if for ^3H .

Disposal of Cleaning Materials (gloves, sponges, etc)

Categories A & B dispose as ordinary garbage, C & D contact your institution's radiation safety office.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 1011

LOCATION: San Diego, CA
VESSEL: R/V Roger Revelle, Van 2408-01

DATE: 16 August 2021
TECHNICIAN: Gary Lain

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	2	± 6	29	± 37
<u>Main Lab (Figure 1)</u>					
3	Starboard sink area	-16	± 41	4	± 45
4	Bench aft of starboard sink	11	± 38	6	± 33
5	Starboard bench below giant monitor	39	± 40	20	± 33
6	Forward center benchtop	6	± 14	34	± 37
7	Inside fume hood	12	± 31	18	± 36
8	Top of freezer	6	± 31	7	± 35
9	Aft workbench	2	± 14	13	± 36
10	Deck inside aft entrance	-1	± 3	27	± 37
11	Deck inside aft port entrance	17	± 28	26	± 36
12	Benchtop forward of starboard sink	-3	± 43	15	± 37
13	Forward starboard benchtop	22	± 51	-6	± 59
14	Deck inside port entrance	14	± 35	9	± 34
15	Port sink area	-25	± 46	-4	± 42
16	Deck below port sink	17	± 130	-27	± 36
17	Desk inside forward port entrance	-17	± 44	-3	± 32
18	Deck below forward bench	56	± 63	-31	± 42
<u>Bio-Analytical Lab (Figure 1)</u>					
19	Aft sink area	15	± 100	-20	± 38
20	Foreward deck	11	± 62	-7	± 73
21	Inside fume hood	-20	± 37	-5	± 49
22	Forward sink area	-27	± 50	-3	± 29
23	Inside freezer	14	± 43	1	± 20
24	Deck at starboard entrance	23	± 42	6	± 30
25	Deck at aft entrance	18	± 45	2	± 22
26	Inside refrigerator	22	± 53	-7	± 78
<u>Miscellaneous Areas (Figure 1)</u>					
27	Deck outside walkin refrigerator	-10	± 72	-16	± 30
28	Deck inside walkin freezer	-3	± 26	4	± 38
29	Deck inside walkin refrigerator	8	± 59	-3	± 29

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
30	Deck of vestibule adjacent to companionway	49	± 48	0	± 6
31	Deck inside darkroom	6	± 36	3	± 32
32	Deck inside gym	-15	± 39	22	± 38
33	Deck science storeroom	30	± 56	-12	± 24
<u>Hydro Lab (Figure 2)</u>					
34	Starboard sink area	21	± 108	-30	± 41
35	Inside fume hood	8	± 51	-1	± 8
36	Forward deck	-3	± 25	-9	± 96
37	Benchtop aft of stbd sink area	12	± 31	-29	± 39
38	Inside Cospolish refrigerator top	23	± 54	-9	± 90
39	Port bench	3	± 19	-8	± 86
40	Inside Cospolish freezer bottom	-8	± 59	1	± 73
41	Deck inside starboard entrance	-11	± 28	-11	± 21
42	Deck in front of aft port sink	-35	± 64	19	± 41
43	Aft port sink area	25	± 47	-1	± 21
<u>Wet Lab (Figure 2)</u>					
44	Deck at aft entrance	15	± 51	-3	± 29
45	Forward benchtop	12	± 170	-21	± 29
46	Sink area	12	± 30	-27	± 36
47	Inside fume hood	-9	± 66	-27	± 36
48	Deck in center of lab	1	± 5	20	± 37
49	Deck in center of staging bay	-4	± 26	-15	± 29
50	Sink area	15	± 32	16	± 35
51	Benchtop adjacent to sink	41	± 60	-25	± 33
<u>Radioisotope Van #2408-01 (Figure 3)</u>					
52	Benchtop adjacent to fume hood	411	± 63	*95	± 32
53	Inside fume hood	115	± 34	*171	± 41
54	Benchtop adjacent to LSC	53	± 37	40	± 35
55	Benchtop across from sink	19	± 36	13	± 34
56	Inside refrigerator	*1008	± 84	*384	± 44
57	Inside freezer	381	± 63	*119	± 35
58	Deck between LSC and fume hood	215	± 53	*76	± 34
59	Deck in center of van	104	± 45	*64	± 36
60	Deck at van entrance (shoe change area)	173	± 50	*68	± 34
61	Final bucket blank	16	± 32	16	± 35

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the negative values to zero. Values are only significantly above background when positive and larger than the error. All areas tested on the ship were free from isotope contamination that requires cleaning. Minor ^3H and ^{14}C contamination found in Van #2408.01. No action is necessary.

R/V ROGER REVELLE

Figure 1
SWAB 1011
16 August 2021

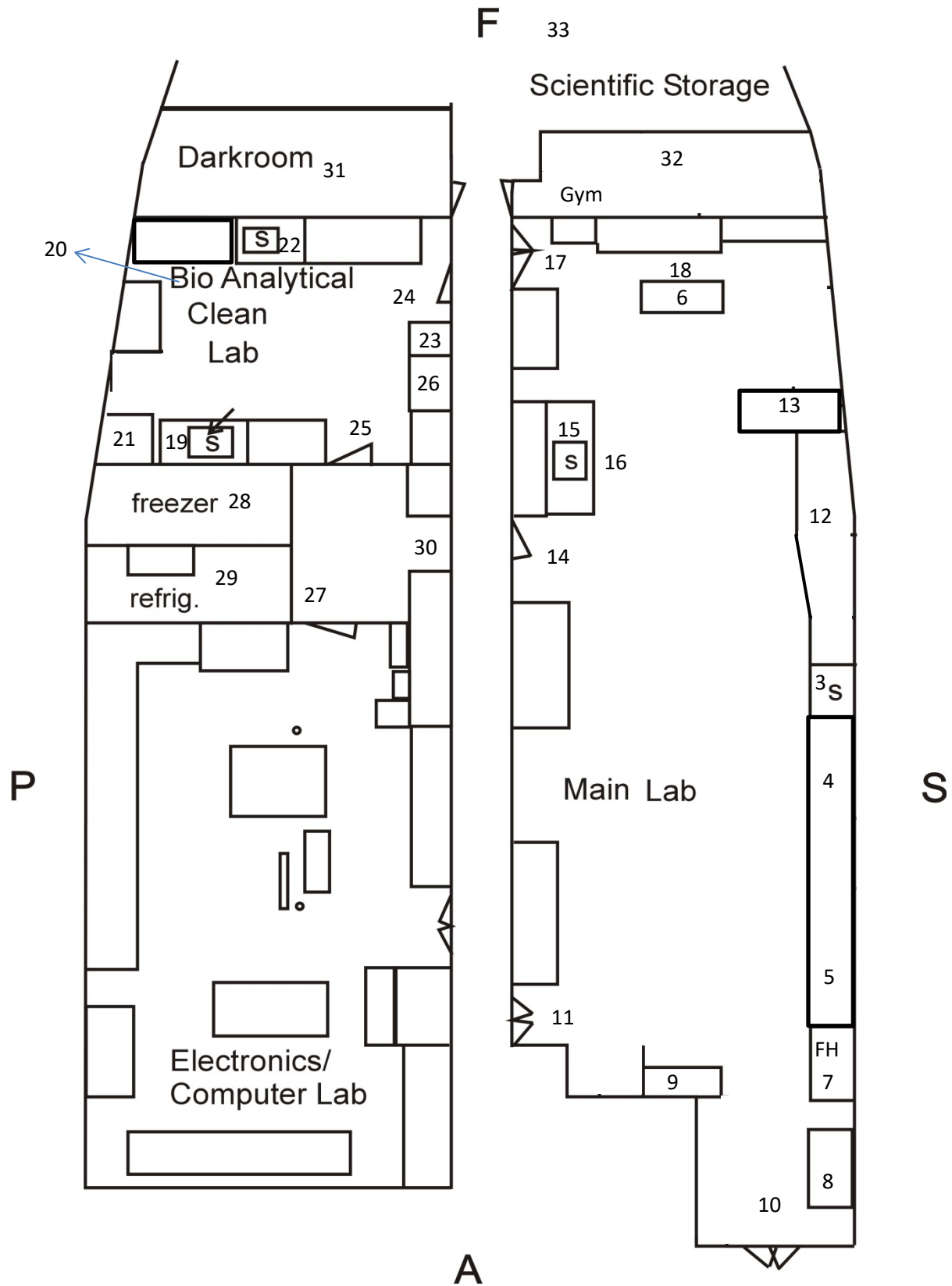


Figure 2
SWAB 1011
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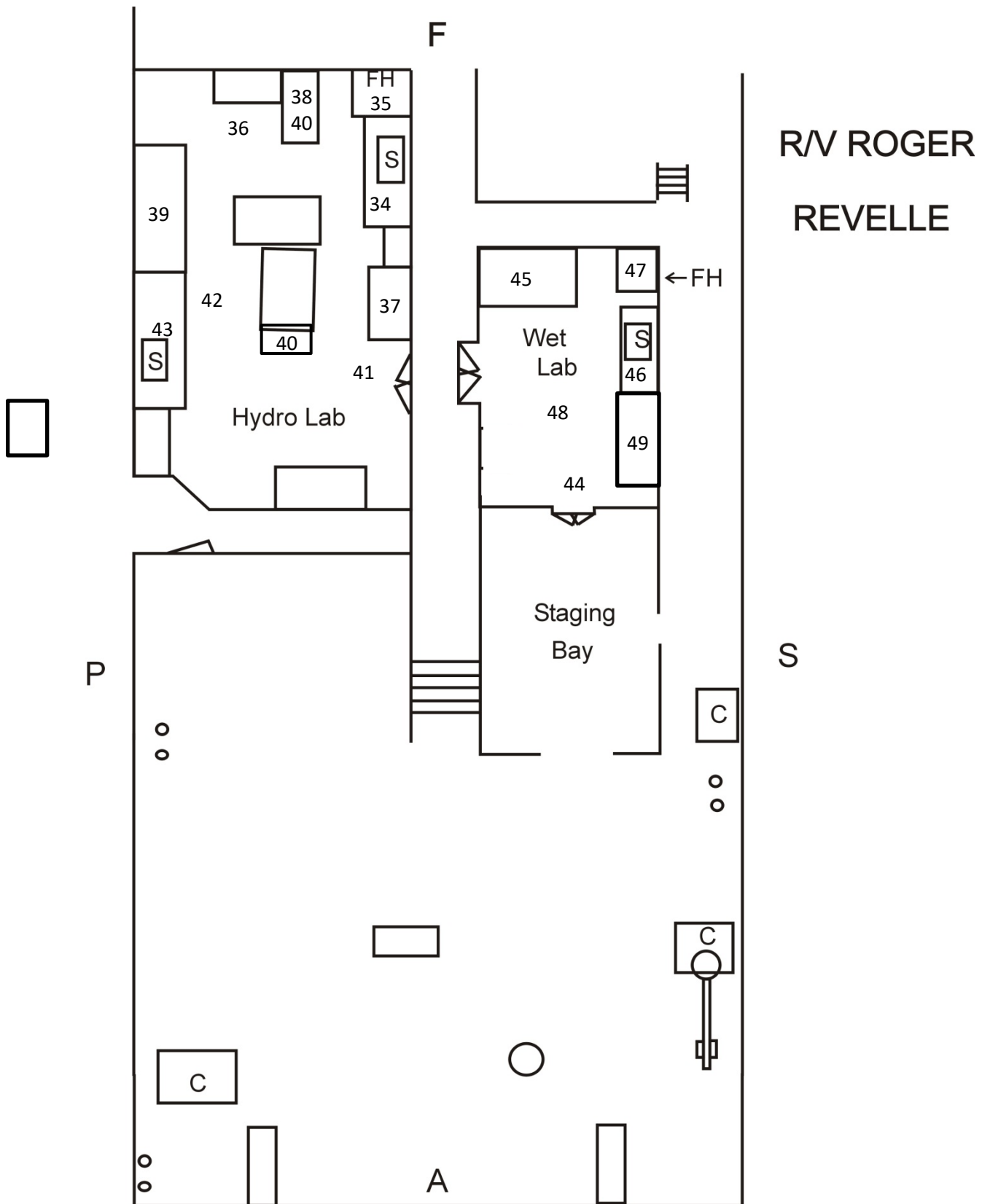


Figure 3
SWAB #1011
16 August 2021

Rad Van 2408-01

